

REMARKS/ARGUMENTS

The specification has been amended to update the status of the related applications identified therein. No new matter has been added by any of the amendments.

Claims 1-20 are pending in the present application. Claims 1, 11 and 20 were amended. No claims were added or canceled. Applicants have carefully considered the cited art and the Examiner's comments, and believe the claims patentably distinguish over the cited art and are allowable in their present form. Reconsideration of the rejection is, accordingly, respectfully requested in view of the above amendments and the following comments.

I. 35 U.S.C. § 112, Second Paragraph

The Examiner has rejected claims 1, 11 and 20 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter, which applicants regard as the invention. This rejection is respectfully traversed.

With regard to claims 1, 11 and 20, the Examiner stated:

Regarding claims 1, 11, and 20, the phrase "may be" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

Office Action dated September 13, 2006 at page 3.

With regard to claim 20, the Examiner stated:

The Applicant appears to be attempting to invoke 35 U.S.C. 112 6th paragraph in Claim 20 by using "means plus function" language. However, the Examiner notes that the only "means" for performing these cited functions in the specification appears to be software. Since no other specific structural limitations are disclosed in the specification, the claims have not invoked 35 U.S.C. 112 6th paragraph when considered below. The body of the claim appears to reasonably cover software only "means" and does not constitute an "apparatus" as recited in the preamble.

Office Action dated September 13, 2006 at page 3.

By the present amendment, claims 1, 11 and 20 have each been amended to delete the phrase "that may be performed". In addition, claim 20 has been amended to recite that the invention is directed to a system rather than an apparatus and, in addition, to positively recite structural limitations in the claim. Claims 1, 11 and 20 as amended herein fully satisfy the requirements of 35 U.S.C. § 112, second paragraph, in all respects, and withdrawal of the rejections thereunder is respectfully requested.

II. 35 U.S.C. § 101

The Examiner has rejected claims 11-20 under 35 U.S.C. § 101 as being directed towards non-statutory subject matter.

The Examiner states:

Claims 11-19 are directed to a "computer program product in a computer readable medium." According to Applicant's specification the "computer readable medium" may include electromagnetic signals. A form of energy, as electromagnetic signals are, does not fall in a statutory category of invention since it is not limited to a process, machine, manufacture, or a composition of matter.

Claim 20 can be reasonably interpreted as being directed to software per se (see discussion above) which is a functional descriptive material and therefore non-statutory.

Office Action dated September 13, 2006 at page 4.

Although Applicants respectfully disagree that claims 11-20 are directed to non-statutory subject matter, in order to expedite prosecution, claim 11 has been amended to recite that the computer readable medium is a recordable-type computer readable medium. Such terminology is fully supported on page 127, lines 2-4 of the present specification and does not include electromagnetic signals. Accordingly, claim 11, and claims 12-19 dependent thereon, now fully satisfy the requirements of 35 U.S.C. § 101 in all respects. Independent claim 20 also has been amended to preclude being directed to software per se, and also satisfies the requirements of 35 U.S.C. § 101.

Therefore the rejection of claims 11-20 under 35 U.S.C. § 101 has been overcome.

III. 35 U.S.C. § 103, Obviousness

The Examiner has rejected claims 1-20 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,966,538 to Granston et al. (hereinafter "Granston") in view of U.S. Patent Publication No. 2002/0073406 to Gove. This rejection is respectfully traversed.

With regard to independent claims 1, 11 and 20, the Examiner states:

Granston discloses a method, in a data processing system, for optimizing runtime execution of a computer program (abstract), comprising:

modifying performance profile data accumulated during a trace of a computer program execution to include annotations based on the occurrence of one or more events (col. 4, lines 34-37, fig. 2), wherein the one or more events occur based on performance indicators ("profile information") associated with one or more portions of the computer program.

However, Granston does not specifically disclose wherein the one or more events occur based on hardware counter values.

Gove discloses a similar method using event counter information to improve the runtime execution of a computer program wherein the one or more events occur based on hardware counter values ("event counter") (abstract,

paragraphs 8, 20, fig. 2).

It would have been obvious to one with ordinary skill in the art at the time the invention was made to include Gove's hardware counter information to provide hardware assistance to the optimization of the runtime execution in Granston's method in order to minimize latency introduced by software profiling which usually work by adding more code in the profiled program therefore potentially increasing latency.

Granston also discloses providing the annotated performance profile data to a computer program compiler (fig. 2, item 14);

and identifying one or more optimizations to the runtime execution of the computer program that may be performed based on the performance profile data and the annotations ("determine which compiler options should be applied", col. 3, lines 44-47).

Office Action dated September 13, 2006 at pages 5-6.

Claim 1 as amended herein is as follows:

1. A method, in a data processing system, for optimizing runtime execution of a computer program, comprising:
 - modifying performance profile data accumulated during a trace of a computer program execution to include annotations based on the occurrence of one or more events during execution of the computer program, wherein the one or more events occur based on hardware counter values and performance indicators associated with one or more portions of the computer program;
 - providing the annotated performance profile data to a computer program compiler; and
 - identifying one or more optimizations to the runtime execution of the computer program based on the performance profile data and the annotations.

A fundamental notion of patent law is the concept that invention lies in the new combination of old elements. Therefore, a rule that every invention could be rejected as obvious by merely locating each element of the invention in the prior art and combining the references to formulate an obviousness rejection is inconsistent with the very nature of "invention." Consequently, a rule exists that a combination of references made to establish a *prima facie* case of obviousness must be supported by some teaching, suggestion, or incentive contained in the prior art which would have led one of ordinary skill in the art to make the claimed invention.

The Examiner bears the burden of establishing a *prima facie* case of obviousness based on the prior art when rejecting claims under 35 U.S.C. § 103. *In re Fritch*, 972 F.2d 1260, 23 U.S.P.Q.2d 1780 (Fed. Cir. 1992). The requirements for establishing a *prima facie* case of obviousness in view of a combination of references are set forth in detail in Section 2142 of the MPEP and include the requirements that the Examiner explain in detail why the combination of the teachings is proper, that the Examiner provide a clear and convincing line of reasoning as to why an artisan would have found the claimed invention obvious in light of the teachings of the references, and that the Examiner provide a showing that it is the prior art and not the Applicant's own disclosure that teaches the combination asserted by the Examiner.

Applicants respectfully submit that neither Granston nor Gove nor their combination discloses or suggests “modifying performance profile data accumulated during a trace of a computer program execution to include annotations based on the occurrence of one or more events during execution of the computer program, wherein the one or more events occur based on hardware counter values and performance indicators associated with one or more portions of the computer program”; and, accordingly, also do not disclose or suggest “providing the annotated performance profile data to a computer program compiler” or “identifying one or more optimizations to the runtime execution of the computer program based on the performance profile data and the annotations”.

The Examiner refers to col. 4, lines 34-37 of Granston as disclosing modifying performance profile data accumulated during a trace of a computer program execution to include annotations based on the occurrence of one or more events, wherein the one or more events occur based on performance indicators (“profile information”) associated with one or more portions of the computer program. Col. 4, lines 34-38 of Granston is as follows:

In addition to utilizing compile-time and user information, the present invention may also utilize profile information 13 obtained during execution of the program to determine which compiler options should be applied when compiling a particular application.

The above recitation may disclose that profile information obtained during execution of a program may be used with compile-time and user information to determine which compiler options should be used. The recitation does not, however, disclose or in any way discuss that performance profile data be modified to include annotations that are “based on the occurrence of one or more events during execution of the computer program, wherein the one or more events occur based on hardware counter values and performance indicators associated with one or more portions of the computer program” as recited in claim 1. Compile-time information and user information are not the same as annotations that are “based on the occurrence of one or more events during execution of the computer program, wherein the one or more events occur based on hardware counter values and performance indicators associated with one or more portions of the computer program”.

Furthermore, Granston does not disclose providing annotated performance profile data in any event. The Examiner indicates that item 14 in Fig. 2 of Granston comprises a disclosure of providing annotated performance profile data. Applicants respectfully disagree. Item 14 in Figure 2 of Granston merely indicates that a compiler compiles with new options selected by a user (see col. 4, lines 61-64 of Granston).

Gove does not supply the deficiencies in Granston. Gove discloses using event counter information to improve the performance of a compiled application, but does not disclose or suggest that such information gained from an event counter can be used to modify performance profile data “to include annotations based on the occurrence of one or more events during execution of the computer program, wherein the one or more events occur based on hardware counter values and performance indicators associated with one or more portions of the computer program” as recited in claim 1.

Inasmuch as neither Granston nor Gove nor their combination discloses or suggests “modifying performance profile data accumulated during a trace of a computer program execution to include annotations based on the occurrence of one or more events during execution of the program, wherein the one or more events occur based on hardware counter values and performance indicators associated with one or more portions of the computer program”, it would not be obvious to one skilled in the art to combine the teachings of Granston and Gove to achieve the present invention. The Examiner has not provided a clear and convincing line of reasoning as to why an artisan would have found the claimed invention obvious in light of the teachings of Granston and Gove, nor has the Examiner provided a showing that it is the prior art and not the Applicants’ own disclosure that teaches the combination asserted by the Examiner.

Applicants respectfully submit, therefore, that the Examiner has not established a *prima facie* case of obviousness in rejecting claim 1 as obvious over Granston in view of Gove, and that claim 1 patently distinguishes over the references in its present form.

Independent claims 11 and 20 have been amended in a manner similar to claim 1 and are also not obvious over Granston in view of Gove for similar reasons as discussed in detail above with respect to claim 1. Claims 2-10 and 12-19 depend from and further restrict one of claims 1 and 11 and are also not obvious over Granston in view of Gove, at least by virtue of their dependency.

Therefore, the rejection of claims 1-20 under 35 U.S.C. § 103(a) has been overcome.

IV. Conclusion

It is respectfully urged that the subject application is patentable over Granston in view of Gove and is now in condition for allowance. It is, accordingly, respectfully requested that the Examiner so find and issue a Notice of Allowance in due course.

The Examiner is invited to call the undersigned at the below-listed telephone number if in the opinion of the Examiner such a telephone conference would expedite or aid the prosecution and examination of this application.

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Respectfully submitted,

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